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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,097	10/01/2003	Sung Lee	600-1-294N	5490
23565 7590 03/05/2007 KLAUBER & JACKSON 411 HACKENSACK AVENUE HACKENSACK, NJ 07601			EXAMINER HANLEY, SUSAN MARIE	
			ART UNIT	PAPER NUMBER
			1651	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/05/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/677,097

Applicant(s)

LEE ET AL.

Examiner

Susan Hanley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-7 and 9-33 is/are pending in the application.
- 4a) Of the above claim(s) 12-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,9-11 and 28-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) ☐ Other: _____ |

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DETAILED ACTION

The response and amendment filed 12/13/06 are acknowledged.

Claims 1, 2, 5-7, and 9-33 are pending. Claims 12-27 stand withdrawn. Claims 1, 2, 5-7, 9-11 and 28-33 are under examination.

Response to Arguments

Applicant's arguments, see pages 7-12, filed 12/13/06, with respect to the rejection of claims 1-11, now corresponding to claims 1, 2, 5-7 and 9-11, under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement have been fully considered and are persuasive. The declaration under 37 CFR 1.132 filed 12/13/06 is sufficient to overcome the rejection of claims 1, 2, 5-7 and 9-11 based upon 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The rejection of claims for said rejection has been withdrawn.

Applicant's arguments, see pages 12-13, filed 12/13/06, with respect to the scope rejection of claims 1-11, now corresponding to claims 1, 2, 5-7 and 9-11, under 35 U.S.C. 112, first paragraph, have been fully considered and are persuasive. The declaration under 37 CFR 1.132 filed 12/13/06 is sufficient to overcome the scope rejection of claims 1, 2, 5-7 and 9-11 based upon 35 U.S.C. 112, first paragraph. The rejection of claims for said rejection has been withdrawn.

Applicant's arguments, see pages 13-18, filed 12/13/06, with respect to the rejection of 2, 7 and 9-11 under 35 U.S.C. 112, second paragraph; the rejection of claims 1, 2, 5-7 and 9-11, under 35 U.S.C. 101 as being directed to non-statutory subject matter; and the rejection of claims 1, 5 and 6, under 35 U.S.C. 102(b), have been fully considered and are persuasive. The rejection of said claims for said rejections have been withdrawn.

However, upon further consideration, a new ground(s) of rejection are made:

Claim Rejections - 35 USC § 112

Claims 1, 5-7, 9-11, 28-30, 32, and 33 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated glycosylated endopeptidase that is isolated from a Streptococcus or a Staphylococcus bacterium, having a pH optimum between 7.5 and 10, an apparent molecular weight of 14,000 Da, and cleaves at the glutamic acid at position 9 and after the serine at position 6 of SEQ ID No. 2, does not reasonably provide enablement for said isolated glycosylated endopeptidase that is isolated from a Streptococcus or a Staphylococcus bacterium having said pH optimum and molecular weight properties that cleaves at a site within, or C-terminal to the LPXTG motif (SEQ ID No: 1; the cleavage limitations recited in instant claim 1) or the ability to bind and cleave a substrate containing an amino acid sequence comprising LPXTG motif (SEQ ID No: 1; the limitations pertaining to cleavage specificity of claims 30 and 33). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

The claims are drawn to a glycosylated endopeptidase isolated from a Streptococcus or a Staphylococcus bacterium, having a pH optimum between 7.5 and 10 and an apparent molecular weight of 14,000 Da. Claim 1 recites that the endopeptidase cleaves at a site within, or C-terminal to the LPXTG motif (SEQ ID No. 1) and claims 30 and 33 recite a broader cleavage specificity wherein the endopeptidase binds and cleaves a substrate containing an amino acid sequence comprising LPXTG motif (SEQ ID No. 1).

However, the specification discloses that the cleavage specificity of the claimed endopeptidase is much narrower than claimed in the independent claims 1, 30 and 33. Example 1 (pages 25-26) discloses that the non-immobilized synthetic peptide of SEQ ID NO: 2, KRQLPSTGETANPFY, was cleaved by the endopeptidase at two sites, after the serine at position 6 and the glutamic acid at position 9. (The endopeptidase cleaved only after the glutamic acid at position 9 in the bound form of SEQ ID NO: 2. It is assumed that the endopeptidase was blocked by the bead to which the polypeptide was immobilized

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and, therefore, unable to cleave after position 6.) The specification further discloses that the endopeptidase did not cleave reversed or random peptides having the LPSTG sequence or BSA. Therefore, the specification discloses that the specificity of the of endopeptidase is much narrower than claimed, wherein the endopeptidase cleaves within the LPSGT motif after the serine and after the glutamic acid at position 9 of SEQ ID NO. 2. The specification fails to provide disclosure regarding other cleavage specificities within the LPSGT motif, the identity of other possible amino acids for X in the LPXGT motif which the endopeptidase will bind and cleave, or any other cleavage sites that are C-terminal to the LPXGT motif.

The limited showing of cleavage specificities that are limited to certain positions in a particular polypeptide is not sufficient to enable a claim drawn to an endopeptidase that cleaves within a motif defined as LPXGT or C-terminal thereto or and endopeptidase that binds and cleaves a substrate anywhere as long as the substrate contains the LPXGT motif because the art of Enzymology is too unpredictable. The determination of how polypeptides will bind and undergo cleavage by a given endopeptidase requires an understanding of the catalytic mechanism and the characterization of the active site and the topology of the enzyme in order to understand how various polypeptide/protein substrates bind to the endopeptidase and/or be chemically changed by the endopeptidase in question. At the time of the invention, the disclosed endopeptidase was unknown. With the exception of the cleavage specificity of the non-immobilized SEQ ID NO: 2, the specification fails to guide the skilled artisan as to the particular structural and conformational characteristics of other polypeptide substrates that can be cleaved by the claimed endopeptidase with a reasonable expectation of success.

The specification discloses that the claimed endopeptidase recognizes, bind and cleaves polypeptides having the cleavage specificity reported in Ex. 1, wherein said endopeptidase cleaves at the glutamic acid at position 9 and after the serine at position 6 of SEQ ID No. 2. The specification does not disclose if the endopeptidase has a broader cleavage specificity that can be used by the skilled artisan as a reliable characteristic in order to identify and isolate the claimed endopeptidase. If the disclosure is not

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generally applicable to predicting what other polypeptides having the LPXGT motif, in addition to SEQ ID NO. 2, can be cleaved by the endopeptidase, then the procedure to find and isolate the claimed endopeptidase would have to be considered individually. Given the numerous endopeptidases in a bacterial extract, this would be considered undue experimentation.

There is no method that predicts what other polypeptides having the LPXGT motif will be cleaved by the endopeptidase with a predictable specificity. It is well known in the art that enzymatic activity and specificity is complex. There is no predictable way for a skilled artisan to know in advance what other polypeptides having the LPXGT motif, in addition to SEQ ID NO. 2, can be cleaved by the endopeptidase as set forth in the instant application. The limited disclosure cannot be extrapolated by the skilled artisan to predict when the disclosure is enabling for identifying the cleavage specificity of the claimed endopeptidase. It would require one of ordinary skill in the art undue experimentation to predict what other polypeptides having the LPXGT motif, in addition to SEQ ID NO: 2, can be cleaved by the endopeptidase according to the directions of the instant disclosure. Thus, claims 1, 5-7, 9-11, 28-30, 32, and 33 are not commensurate in scope with the enabling disclosure.

Claims 1, 2, 5-7, 9-11, 28, 29 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "enhanced virulence" in claim 1 is a relative term which renders the claim indefinite. The term "enhanced virulence" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Neither the claims nor the specification provide a comparison such that the ordinary artisan can ascertain to what the enhanced virulence is compared.

Claims 1, 30 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap

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between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: Claims 9-11 are drawn to carbohydrates that are "essential for enzyme activity." It is unclear why the limitations drawn to said essential carbohydrates do not appear in the independent claims since said carbohydrates are essential to the structure and activity of the enzyme.

Claims 7 and 33 are rejected because the phrase "having a K_m of 0.26 mM" is vague and indefinite. The measurement of a Michaelis-Menton constant, K_m , is specific for the substrate that is measured. Claims 7 and 33 do not specify what substrate is associated with the claimed K_m value.

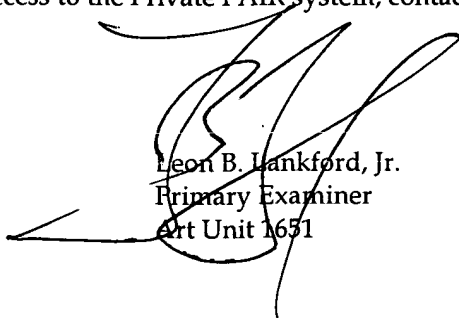
No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Hanley whose telephone number is 571-272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan Hanley
Patent Examiner
1651



Leon B. Hankford, Jr.
Primary Examiner
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